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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,781	09/22/2003	Jiann-Hsing Chen	81624/LPK	9554

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EXAMINER

ZACHARIA, RAMSEY E

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,781

Applicant(s)

CHEN ET AL.

Examiner

Ramsey Zacharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 43-50 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39 is/are allowed.
- 6) ☒ Claim(s) 1-38 and 40-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/11/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

2. Claims 43-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11 February 2005.

Drawings

3. The drawings were received on 11 February 2005. These drawings are accepted.

Claim Rejections - 35 USC § 112

4. Claims 35 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claims 35 and 36 are rendered indefinite because it is unclear if the molecular weight recited in the claims is the number average molecular weight, weight average molecular weight, viscosity average molecular weight, etc.

Claim Rejections - 35 USC § 103

6. Claims 1-38 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meguriya (U.S. Patent 6,261,214) in view of Davis et al. (U.S. Patent 6,225,409).

Meguriya teaches heat fixing roll comprising a organopolysiloxane composition containing a hollow filler (column 2, lines 7-12). The hollow filler has elasticity and is made of polymers of (meth)acrylonitrile, (meth)acrylate, or vinylidene chloride with inorganic particles attached to the walls thereof (column 2, lines 13-26). The hollow filler has a diameter of preferably up to 90 μm (column 2, lines 40-42). The preferred concentration of the hollow filler is as low as 0.5 parts by weight per 100 parts of silicone, i.e. approximately 0.5 wt% (column 2, lines 52-55). Conductive agents, such as carbon black, zinc oxide, aluminum oxide, and titanium oxide, may be added to the silicone (column 4, lines 55-57). Silica (i.e. a strength-enhancing filler particle) having a particle size of about 0.1-50 μm may be added to the silicone (column 4, line 64-column 5, line 2). In the embodiment of Example 1, about 5 wt% of silica is added to the composition (column 6, lines 8-17). A fluoro-resin layer, such as polytetrafluoroethylene, may be formed over the silicone layer (column 5, lines 41-45). The silicon is made by heating first at a temperature of about 100 to 150 $^{\circ}\text{C}$, then at about 180 to 200 $^{\circ}\text{C}$ (column 5, lines 24-28). The silicone has a thermal conductivity of as high as 5.0×10^{-4} cal/cm \cdot sec \cdot $^{\circ}\text{C}$, i.e. about 0.12 BTU/hr/ft/ $^{\circ}\text{F}$ (column 5, lines 29-31). The silicone layer has a preferred thickness of 0.2 to 50 mm, i.e. about 0.008 to 2 inches (column 5, lines 38-40). The preferred upper limit of the thickness of the fluoro-resin layer 50 μm , i.e. about 0.002 inch (column 5, lines 63-65).

Meguriya do not teach the presence of a fluoroelastomer in the silicone layer.

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Davis et al. is directed to a method of forming a composition suitable for toner fusing members (column 1, lines 20-25). The composition comprises an interpenetrating network of a fluorocarbon polymer and a silicone (column 3, lines 18-29). The fluorocarbon polymer may be Viton A (column 5, lines 38-41). Viton A is a fluoroelastomer having a fluorine content of about 70% which comprises 75 mole% vinylidene fluoride and 25 mole% hexafluoropropylene. The fluorocarbon polymer has a molecular weight of about 10,000 to 200,000 (column 5, lines 54-60). The interpenetrating the silicone with the fluoroelastomer yields a material having the release characteristics of silicone in addition to the excellent heat, oil, and chemical resistance as well as good fatigue and wear characteristics of the fluoroelastomer (column 2, lines 7-14 and column 4, lines 10-21).

One skilled in the art would be motivated to interpenetrate the silicone of Meguriya with the fluoroelastomer of Davis et al. to improve the heat, oil, and chemical resistance as well as the fatigue and wear characteristics of the resulting roller.

Regarding claims 7 and 8, the amount of conductive agent added to the composition directly affects the conductivity of the silicone. That is, the amount of conductive agent added is a results effective variable. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the amount of conductive agent in the silicone, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 17, 18, and 34, the temperature at which the material is made, the curing process, and the size of the particles from which the layer comprising a fluoroelastomer is made are all product-by-process limitations. When the prior art discloses a product which

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reasonably appears to be either identical with or only slightly different than a product claim in a product-by-process claim, the burden is on the applicant to present evidence from which the examiner could reasonably conclude that the claimed product differs in kind from those of the prior art. *In re Brown*, 459 F. 2d 531, 173 USPQ 685 (CCPA 1972); *In re Fessman*, 489 F. 2d 742, 180 USPQ 324 (CCPA 1974). Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985) and MPEP § 2113. In this case, the resulting products appear to meet all the structural limitations of the product of claims 17, 18, and 34. Therefore, the burden is on the applicant to conclusively demonstrate that the product formed at a temperature of between about 230-260 °C, a product formed by curing with an electron-beam, and a product formed from using fluoroelastomer particles of about 0.01-1 mm in diameter are different from that disclosed by the prior art.

Regarding claim 25, a thermal conductivity of 5.0×10^{-4} cal/cm • sec • °C is taken to read on approximately 0.2 BTU/hr/ft/°F.

Regarding claims 26-28, the Shore A hardness is a material property. Since the both the material claimed as that of the prior art are elastomers containing hollow particles they should have the same Shore A hardness.

Allowable Subject Matter

7. Claim 39 is allowed.

8. The following is a statement of reasons for the indication of allowable subject matter.

Claim 39 is directed to an elastically deformable fusing station roller as recited having a resilient layer containing a fluoroelastomer, microsphere particles, and solid particle. A protective layer is coated on the resilient layer comprising a random copolymer of vinylidene fluoride, hexafluoropropylene, and tetrafluoroethylene in the amounts recited in the claim.

Meguriya represents the closest prior art. Meguriya teaches a fluoro-resin layer corresponding to the protective layer of claim 39. However, Meguriya do not teach or fairly suggest the use of a random copolymer of the three monomers vinylidene fluoride, hexafluoropropylene, and tetrafluoroethylene in the amounts recited in claim 39 as the material for the fluoro-resin layer.

Response to Arguments

9. Applicant's arguments filed 11 February 2005 have been fully considered but they are not persuasive.

Regarding the 35 U.S.C. 112, second paragraph, rejection of claims 37 and 38, the applicants argue that it is well known in the polymer arts to disclose and recite size using molecular weight per se without further embellishment as a unit of measurement, citing U.S. Patent 4,820,693 as support.

This is not persuasive for the following reasons. Because high molecular weight polymers comprise a distribution of chains having different lengths, the molecular weights are reported as averages. The molecular weight of a high polymer is therefore a function of how the average is calculated. See the attached discussion on pages 8-10 in Cowie (Polymers: Chemistry

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and Physics of Modern Materials). In particular, Figure 1.1 on page 9 should be noted demonstrating how molecular weights of the same polymer sample can vary depending on the method by which the molecular weight average is calculated. The fact that U.S. Patent 4,820,693 refers only to molecular weight is immaterial since the polymers disclosed therein are relatively short and would not be considered high polymers. The molecular weights in U.S. Patent 4,820,693 are in the range of 1,000-6,000 as compared to the polymers discussed in Cowie (the numerical example bridging pages 9 and 10 uses a polymer having chains with molecular weights of 100,000 to 1,000,000). The claimed range of molecular weights in the instant invention (10,000-200,000) are much higher than those of U.S. Patent 4,820,693 and within the range of the high polymers discussed in Cowie.

Regarding the art rejection, the applicants argue that the references teach different end results obtained with different starting materials, using different means. Meguriya uses an organopolysiloxane alone with no other polymer making up the continuous phase as opposed to Davis et al. in which an IPN of a crosslinked fluorocarbon copolymer and polyfunctional siloxane is used. Davis et al. teach particular starting materials and process conditions including the use of particular solvents. The applicants argue that one skilled in the art would not be motivated to combine the references because the references fail to disclose or suggest how to combine their teachings, for example how the Meguriya process could be modified to employ the solution of Davis et al.

This is not persuasive for the following reasons. Both Meguriya and Davis et al. are concerned with the same end result: forming a resilient coating layers on rollers for applications such as fuser members. Both Meguriya and Davis et al. appear to use the same type of silicone

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rubber as their starting material. Meguriya uses a peroxide curing silicone (column 2, line 63-column 3, line 9) while Davis et al. also teach the use a silicone cured by peroxide (column 6, lines 41-42). And because both Meguriya and Davis et al. are directed to forming the same product (a cured resilient layer on a rigid core), the teachings of Davis et al. explicitly demonstrates a process by which this product may be formed even when a solvent is present in the coating composition.

The applicants further argue that even if the combination of Meguriya and Davis et al. could be made, it would still not result in the applicants' invention because the layer is a fluoropolymer material. By contrast, Meguriya is a silicone rubber layer and modifying it to include polytetrafluoroethylene would not make it a fluoropolymer layer.

This is not persuasive because an IPN of silicone and polytetrafluoroethylene includes a fluoropolymer material (polytetrafluoroethylene). The claims as written require the resilient layer to have a fluoropolymer material, however, the composition of the resilient layer is not closed to only fluoropolymer materials. For example, in addition to the fluoropolymer material, the resilient layer also contains microsphere particles which may be formed of polymers other than fluoropolymers (see claim 19) and solid filler particles which may be formed of materials that are not polymers at all (see claim 3).

Regarding claims 29 and 30, the applicants argue that the claims recite a pressure roller while Meguriya and Davis et al. are directed to heat fixing rolls.

This is not persuasive because Meguriya taken in view of Davis et al. teach a roller that meets all of the structural limitations of instant claims 29 and 30. The designation of "pressure roller" is merely an intended use of the roller that does not add any structural features or

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limitations. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518.

The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached at (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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